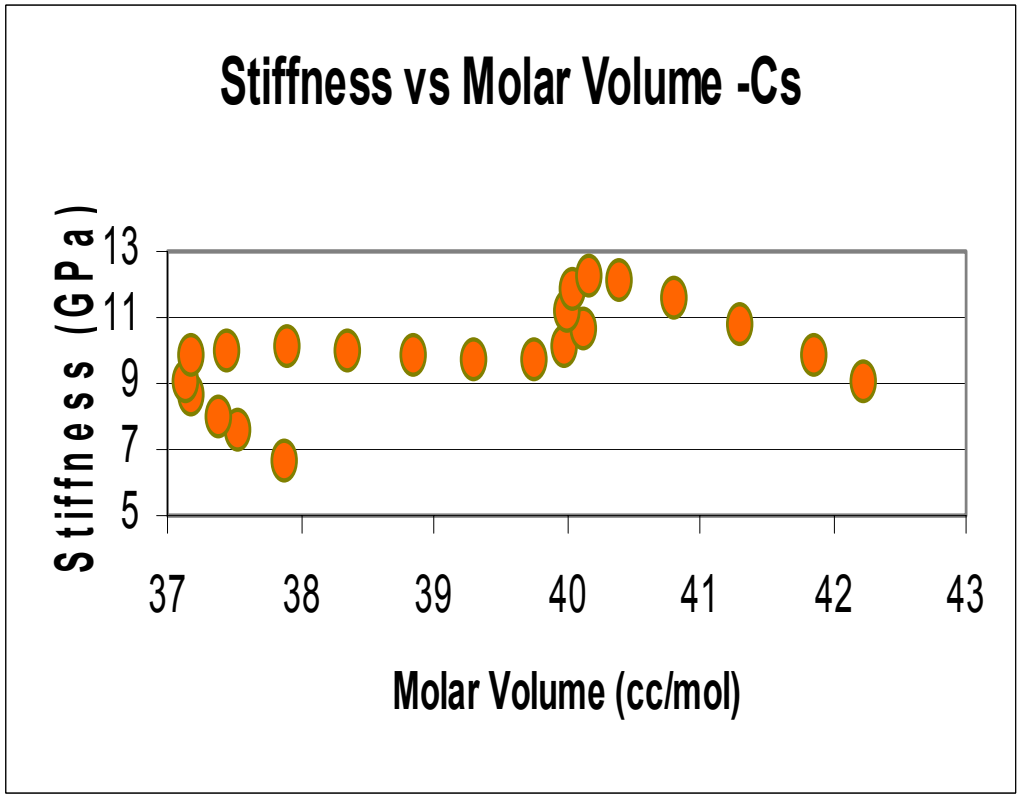
Physical Properties and Spectroscopy of Glasses Related Intermediate Range Order, Steve Feller and Mario Affatigato, *Coe College*, Award #0211718

An important goal of modern glass science is the elucidation of intermediate range order and consequent effects on physical properties of the glass. We show stiffness of alkali borate glasses plotted versus molar volume for cesium borates. Four regions of differing behavior are attributed to the evolution and destruction of intermediate ring structures.



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Education:

During the past 2 summers more than 15 undergraduates have participated in this research including 3 REU students from colleges in Wisconsin and Iowa. These research students have gone to high quality graduate schools including Stanford Univ, Georgia Tech, Univ.of Missouri Rolla, Iowa State Univ., and Univ.of Nebraska. Also, our students have done collaborative research at the Univ. of Reading (UK) for neutron scattering, University of Manitoba for high field solid state NMR, University of Warwick (UK) for novel pulsed ^{10}B NMR experiments, and Iowa State Univ. for Raman and NMR work.

Outreach:

Students and faculty participated in a raft of outreach programs including making glass at a middle school student conference in Cedar Rapids, working with first graders at a public school, and spending a science day at a local Catholic elementary school doing science demonstrations.